

Implementing Innovations

A large crawler crane with a red and white body is positioned on a dirt embankment at a highway interchange construction site. The crane's long lattice boom extends diagonally across the frame towards the upper right, where it is lifting a red weight. In the background, a multi-lane highway with several vehicles, including a white truck and a red car, is visible. The sky is bright blue with scattered white clouds. The foreground shows a pile of grey gravel and some construction equipment.

***STICs—State councils—
are a critical link in
shepherding advanced
technologies and
business processes
into mainstream use.***

by Kathleen Bergeron

State Transportation Innovation Councils bring together stakeholders to enhance efficiency of transportation projects, such as construction of this interchange near Durant, OK, by encouraging use of innovations. Photo: Oklahoma Department of Transportation.

“**T**hink globally, act locally” is a phrase traditionally associated with the environmental community. But it is fast becoming equally appropriate in the world of transportation innovation.

Historically, the Federal Highway Administration’s (FHWA) strategy for encouraging adoption of highway innovations frequently followed an internal, top-down approach. Agency officials would determine that a need existed and then promote a tool, process, or technique for filling the need. Through conferences, workshops, showcases, webinars, and various other communications tools, FHWA then would educate State and local transportation practitioners about the innovations. Grants for demonstration construction projects for applying innovations on actual projects played a role as well, by making it easier for a State agency to afford to try a new technology and learn from the application.

With creation of the Every Day Counts (EDC) initiative in 2010, FHWA began to embrace a more effective approach to developing and deploying promising transportation improvements. EDC set up a comprehensive process for identifying needs that differs from the traditional approach. FHWA now coordinates a formal call for suggestions from the transportation community, and then shortlists a dozen or so innovations for intense promotional efforts over a 2-year period.

FHWA then kicks off the period with regional summits to highlight the innovations to representatives of State transportation agencies and key stakeholder partners. The summits provide an opportunity for State transportation agencies to identify their needs and select the innovations they deem most beneficial. FHWA also shares information through webinars, onsite project showcases, project grants, publications, videos, and training courses.

Despite these process improvements, reaching the right audiences at State and local departments of transportation (DOTs) and the many other relevant organizations continues to be a challenge. A large number of government agencies across the country are tasked with managing highway transportation matters. In addition to State DOTs, county and municipal transporta-

tion departments, metropolitan and regional transportation authorities, and councils of government all have relevant responsibilities. Efforts to reach all of the necessary parties are often incomplete because they are quite costly.

Enter State Transportation Innovation Councils (STICs). A relatively new concept, these councils encourage innovation and cooperation among a wide range of partners at the State and local levels. STICs bring together representatives from all levels of the highway transportation community to work together, building off of each other’s insights to learn about new technologies, determine applicability to their respective States, and develop plans for implementation and adoption into current and future transportation projects as standard practice.

Establishing STICs

FHWA introduced the concept of STICs to the highway community

in fall 2010 during a series of EDC regional summits held throughout the country. The meetings provided participants with details on the first wave of EDC initiatives, known as EDC1, and encouraged States to use them in their projects. During the meetings, FHWA leadership tasked participants with setting up STICs to have all of the diverse players in a State’s highway transportation programs working together toward common goals.

In fall 2012, FHWA held another set of summits and presented a new set of initiatives. At these summits, representatives of the STICs had the opportunity to attend detailed presentations on the new initiatives and ask questions about potential applicability to their States. For more information on the specific innovations and processes promoted in EDC1, see “Every Day Counts” in the January/February 2012 issue of PUBLIC ROADS. For more information on the second round

EDC Innovations		
	EDC1	EDC2
Programmatic Agreements	✓	✓
Planning and Environmental Linkages	✓	
Mitigation Banking and In-Lieu Fees	✓	
Legal Sufficiency	✓	
Scope of Preliminary Design	✓	
Utility Accommodation	✓	
Flexibilities in Right-of-Way	✓	
Enhanced Technical Assistance	✓	
Design-Build Contracting	✓	✓
Construction Manager/General Contractor	✓	✓
Safety Edge SM	✓	
Warm-Mix Asphalt	✓	
Adaptive Signal Control	✓	
Accelerated Bridge Construction: Geosynthetic Reinforced Soil–Integrated Bridge Systems	✓	✓
Accelerated Bridge Construction: Prefabricated Bridge Elements and Systems	✓	✓
Accelerated Bridge Construction: Slide-in Bridge Construction		✓
Locally Administered Federal-Aid Projects		✓
3D Engineered Models for Construction		✓
Intelligent Compaction		✓
Alternative Technical Concepts		✓
High Friction Surface Treatments		✓
Intersection and Interchange Geometrics		✓
Geospatial Data Collaboration		✓
Implementing Quality Environmental Documentation		✓
National Traffic Incident Management Responder Training		✓

of EDC, see “Every Day Counts: The Second Phase” in the March/April 2013 issue of PUBLIC ROADS.

Prior to EDC, several States had entities similar to STICs to serve in a coordinating role. For example, the Iowa Highway Research Board, established in 1950, provided guidance on using funds to research topics related to secondary roads. Today, the group includes representatives of the Iowa Department of Transportation (Iowa DOT), as well as city and county agencies, which made it a suitable organization to serve as the State’s STIC.

Historically, however, most States did not have a group to work cooperatively on deploying transportation technology and enhanced practices. However, with EDC as the driving force nationally, the need for every State to have a STIC became crucial to supporting the initiative. Today, all 50 States plus the District of Columbia and Puerto Rico have STICs in some format.

STIC Membership And Operations

Each council is typically cochaired by a senior official from both the FHWA division office and the State DOT. The range of membership varies, but many include representation from metropolitan planning organizations, county engineers, city public works departments, local transit and tollway authorities, State historical preservation offices, and departments of agriculture. A State’s technology transfer center and tribal transportation assistance programs often participate, as do members of academia.

In addition to FHWA, several STICs have representatives from other Federal agencies such as the Federal Transit

Administration, U.S. Fish & Wildlife Service, the U.S. Environmental Protection Agency, and the U.S. Army Corps of Engineers. Also, STIC members typically include trade associations such as the American Road & Transportation Builders Association, Associated General Contractors of America, American Concrete Pavement Association, National Asphalt Pavement Association, and American Council of Engineering Companies, as well as private construction and consulting companies.

Each State operates its STIC based on its unique needs and approaches to meeting those needs. For example, the New Mexico group met four times in 2012, the Iowa STIC meets monthly, and the Oklahoma council meets every other month. Some STICs are more structured than others, with subgroups and formal presentations.

As Federal Highway Administrator Victor Mendez explained to participants at one of the fall 2012 EDC regional summits, “Every Day Counts is about tailoring to your needs [in] each and every State. We know that you have different rules, different regulations and statutes. So it would be kind of crazy to say, ‘We’re going to implement a certain strategy in Florida exactly the way you would in,

let’s say, Arizona. Because things are different; we recognize that.”

What follows are examples of how STICs in Pennsylvania, Oklahoma, New Mexico, and Wisconsin are working to advance innovations in their own backyards.

Pennsylvania

Pennsylvania’s STIC includes representatives from national and local transportation associations, State and local government agencies, environmental and historical preservation professionals, and members of academia. In addition to its 21-member leadership group, the Pennsylvania STIC includes 10 technical advisory groups for the areas of project delivery, construction, maintenance, design, environment, safety, technology, intelligent transportation systems, materials, and public outreach.

These groups review innovations that fall into their respective areas and then develop white papers describing their potential impacts. STIC members then review the white papers at a quarterly meeting and either accept the innovation or request further information. When an innovation is approved, members set up an initial deployment as a pilot project and monitor its progress.

During the first phase of EDC, the Pennsylvania STIC promoted several

Pennsylvania used a geosynthetic reinforced soil-integrated bridge system, an innovation the STIC is promoting through Every Day Counts, on this bridge replacement project in Huston Township, PA.



G. Randy Albert, PennDOT

Projects across Oklahoma—from complex urban freeways, such as I-40 in Oklahoma City, shown here during an earlier realignment project, to rural, two-lane roadways—can benefit from the State's STIC program.

innovations, such as warm-mix asphalt, adaptive signal control technology, prefabricated bridge elements and systems, the Safety EdgeSM, utility accommodation, and geosynthetic reinforced soil-integrated bridge systems. Beyond EDC, the Pennsylvania STIC has championed more than 40 initiatives within the State, including use of expanded polystyrene geofoam (an ultralightweight fill material), integration of the *Highway Safety Manual* into everyday practice, and new methods for innovative bidding and contracting.

Eric Madden, executive vice president of the American Council of Engineering Companies in Pennsylvania, says that as a member of the Pennsylvania STIC, he recognizes the role innovation can play in the State. "With limited resources, we must continue to look for ways to work more efficiently," he says. "Our innovations must also enhance safety and be completed in a more environmentally friendly way. This is about getting out of our comfort zone—about change. Just because we've always done something the same way does not necessarily mean we are doing it the right way today."

The STIC is one of five initiatives in the Pennsylvania Department of Transportation's (PennDOT) Next Generation, a review of policies, processes, and procedures aimed to "create new efficiencies...advance [its] business practices and technology...and...create a culture of continuous improvement." Next Generation aims to make the agency both a better business partner and a better employer.

In the *PennDOT Next Generation 2012 Progress Report*, Pennsylvania Secretary of Transportation Barry Schoch noted a projected annual savings of \$50 to \$75 million from increased efficiencies and enhanced current practices. "PennDOT has been working to ensure [that] we're operating and delivering projects as efficiently as we can," says Secretary Schoch. "The State Transportation



Oklahoma DOT

Innovation Council is a key component in PennDOT's Next Generation as we work with various stakeholders and experts to provide a better transportation product to Pennsylvania taxpayers through innovative, cost-effective, and proven technologies and techniques."

With the culture of innovation instilled by the STIC, PennDOT is using innovation as a tool for promoting safety and fast, high-quality, long-lasting construction. To maintain and promote an environment that is receptive to a better way of doing things, in January 2013 the department formed the Transportation Innovations Office to serve as a central unit focused on innovation. According to PennDOT Innovations Officer Nolan Ritchie, the office "institutionalizes a cul-

ture of innovation and constant evaluation of business practices to ensure [that] PennDOT is an effective steward of taxpayer dollars."

Oklahoma

Oklahoma's STIC also relies on a broad group of partners to reach the State's goals for adopting innovations. Membership in the Oklahoma STIC reflects the diversity of its locale. For example, Native American tribal programs also participate in the Oklahoma council.

In 2012, Oklahoma Governor Mary Fallin announced an aggressive bridge replacement and rehabilitation program, which the STIC agreed to make its top priority. The Governor's goal is to eliminate all structurally deficient bridges on the State highway system within 8 years. The



NMDOT used warm-mix asphalt on this pavement preservation project on sections of I-25 in Sierra County. The State has exceeded its goal of using warm-mix asphalt on at least one project in each district.

Oklahoma Department of Transportation (ODOT) included the replacement or rehabilitation of more than 600 structurally deficient bridges in its 8-year construction plan. The STIC's role focuses on identifying and eliminating existing roadblocks to the effort, such as relocation of utilities, flexibility in right-of-way, and environmental streamlining, all of which were among the initial wave of EDC innovations.

At a presentation in January 2012, the director of the city of Norman's public works department and the director of the local metropolitan planning organization shared with the STIC some common utility-related issues, such as response time from utility companies and the need for improved communication between the local jurisdiction, utilities, and contractors. In addition, representatives of Oklahoma Gas & Electric Company outlined the issues they face when relocating utilities on highway projects and recommended changes that could expedite the process. These included establishing a meeting with utility companies to identify conflicts and make decisions on relocation needs, and utilizing GIS mapping technology to overlay data from the utility, ODOT, and county and city records. Similarly, the director of the Cherokee Nation Roads program and the director of the ODOT Right-of-Way & Utilities Division presented

right-of-way issues they have encountered in transportation projects.

"The Oklahoma STIC has provided the public and private sectors with a unique opportunity to seek outside-the-box solutions to everyday issues each of the agencies deals with," says Viplav Putta, STIC member and transportation planning and programs manager with the Indian Nations Council of Governments. "The council has provided a much-needed common platform where State, local, tribal, and Federal resource agencies can learn from each other to provide better customer service and to advance the mission in delivering publicly funded projects."

Altogether, STIC meetings have resulted in more than 45 recommendations on ways to expedite project delivery. ODOT is working to implement these recommendations, for example, establishing a quarterly coordination meeting to improve perceptions of and communication between the resource agencies and the bridge owners. ODOT also is forming a subcommittee with a utility representative to address utility relocation issues.

"The greatest accomplishment of the Oklahoma STIC is that it has brought to the table all of the transportation and resource agency stakeholders in the State," says Ivan Marrero, assistant division administrator for the FHWA Oklahoma Division. "All members come to

the table with an open mind and a desire to contribute toward our overall goal of expediting the delivery of our highway projects."

New Mexico

In its charter, the New Mexico STIC acknowledges that "State DOTs, local public agencies, and the tribal transportation agencies nationwide own the [transportation] system and make key decisions on how to deliver projects, as well as what techniques and technologies to use in the operation and safety on our highway system." Further, the charter reads, the purpose of the STIC is to bring "together stakeholders that represent all those market forces, and we work together to lead innovation in our State transportation system."

Today, New Mexico's council is focused on 12 EDC1 innovations and 5 additional initiatives under EDC2. According to Marcus Wilner, FHWA's EDC coordinator for New Mexico, the ability to connect with the EDC teams that champion the various innovations nationwide has been very helpful. "Through regular communication with the EDC implementation teams, our STIC has been leading the State in implementing key innovations," Wilner says. "To date, eight of the EDC1 innovations are in mainstream use in New Mexico."

The New Mexico Department of Transportation (NMDOT) has concentrated its efforts on increasing the use of warm-mix asphalt statewide. The State went from having zero projects when the EDC initiative began in 2009 to having a total of 36 to date, totaling 678 lane-miles (1,091 lane-kilometers) of warm-mix asphalt pavement in less than 2 years. These projects exceed the State's goal of having at least one warm-mix asphalt project per district.

In addition, FHWA approved New Mexico's standard specification for warm-mix asphalt in November 2011, paving the way for expanded use of this technology on even more roads.

"Our STIC meets regularly and continues to ensure that EDC successes, such as warm-mix asphalt, are showcased and adopted as standard practice in New Mexico," Wilner says.

Wisconsin

The Wisconsin STIC developed out of an EDC implementation team convened in 2010. It now includes representatives from the Wisconsin Department of Transportation (WisDOT), the Wisconsin Transportation Information Center, county highway agencies, the American Public Works Association, contractors, consultants, the Wisconsin State Department of Natural Resources, and FHWA.

"Having broad representation on the team has been helpful in selecting initiatives that have the most promise and avoiding those with limited applicability or support in Wisconsin," says David Kopacz, FHWA's EDC coordinator for Wisconsin. "The team holds periodic meetings to measure progress on the implementation of the selected initiatives and provides feedback when necessary."

The Wisconsin STIC has promoted several EDC initiatives, such as the geosynthetic reinforced soil-integrated bridge system, adaptive signal control technology, the SafetyEdgeSM, and warm-mix asphalt. Notably, in spring 2012, WisDOT, FHWA, and the University of Wisconsin hosted a demonstration of the geosynthetic reinforced soil-integrated bridge system technology at a pilot project. This bridge construction method involves placement of alternating layers of geosynthetic reinforcement and granular soils to build enhanced abutment and

approach embankments. WisDOT used the technology to replace a 60-year-old bridge over State Highway 40 in Chippewa County, WI. State and local transportation officials, contractors, consultants, and members of academia were onsite to view the installation.

"They're really quite an advantage over our conventional abutments in some of the applications in that it minimizes some of the equipment that you need [at] the construction site, like pile drivers and things to support cast-in-place concrete substructures," says Bill Oliva, chief of the structures development section at WisDOT. "There is about a 20- to 30-percent savings in overall structure costs when you're employing the [geosynthetic reinforced soil] technology."

Conclusion

The process of deploying innovations for use on actual transportation projects presents challenges at all levels. However, STICs have proven to be a valuable tool in coordinating EDC and other efforts to encourage adoption of new approaches to building, maintaining, and managing the transportation system at the State and local levels.

In the first 2 years of existence, STICs already have helped lead to a dramatic increase in the number of projects implementing innovative technologies nationwide. The STIC concept itself is an innovation and is proof that thinking globally and acting locally makes a lot of sense when it comes to improving highways.

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This backhoe is placing a layer of granular soil during construction of a geosynthetic reinforced soil-integrated bridge system for a pilot project in Chippewa County, WI.

